

09/867,662
Art Unit: 1762

Remarks

The claim objections have been attended to. The dual representation in shorthand and longhand has been eliminated for clarity.

The claims have been amended to define the invention more clearly. In particular, independent claims 1 and 20 have been amended to specify that optical quality films differing in refractive index by Δn are deposited. Please see, for example, paragraph [0013].

While it is true that there are a number of variables and each can be varied in an arbitrary manner, there are many so many combinations of different values for each of the variables that one skilled in the art could experiment for ever trying to find the right combination to achieve a particular result, and in particular absorption-free optical films with a desired refractive index differential between them, referred to in the specification as Δn . The invention puts some order in this chaos by showing that it is possible to vary the flow rate of the dopant gas, PH_3 in the illustrated embodiment, without having an effect on the oscillators that affect absorption in the 1.3 to 1.55 micron optical bands. Having optimized the absorption characteristics, it is possible to achieve the desired Δn simply by changing the flow rate of the dopant gas. Surprisingly, in accordance with the applicant's teaching, it is found that changing the flow rate does not affect absorption properties of the deposited films, at least within the waveband of interest. As a result, the absorption characteristics can be optimized by looking at the FTIR characteristics, and once that has been achieved the desired Δn between the layers can be achieved merely by changing the flow rate of the PH_3 gas.

The Examiner acknowledges that the prior art is silent in respect of the maintaining the flow rates of gases constant while changing one, but alleges that one skilled in the art would have a reasonable expectation of doing so. The amended claims are now more specific about the gases involved, and in particular the fact that the flow rates of the gases other than the dopant gas are held constant along with the total pressure. While a person skilled in the art no doubt *could* have operated in this manner, absent any knowledge about the effects of doing so, an in particular the lack of effect on the oscillators resulting from a variation in the flow rate of dopant gas, which permits the refractive index to be changed, it is respectfully submitted that the person skilled in the art *would* have had no reason for doing practicing the invention as now defined in the independent claims with the expectation of success.

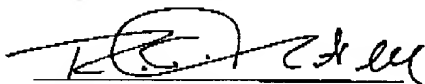
09/867,662

Art Unit: 1762

The effects of varying the flow rate of the dopant gas and holding the other variables constant are extensively described in the specification, and it is indeed surprising to one skilled in the art that these effects are achieved. Thus, in the applicant's respectful submission, without the knowledge set forth in the specification, there would be no motivation for one skilled in the art to practice the invention as now more clearly set forth in the claims and such a person would have no expectation that any particular advantage would be achieved by doing so.

Reconsideration and allowance are respectfully requested.

Respectfully submitted,



Richard J. Mitchell
Registration No. 34519
Agent of Record

MARKS & CLERK
P. O. Box 957, Station B,
Ottawa, Ontario, Canada
K1P 5S7
(613) 236-9561